



National Aeronautics and Space Administration
Goddard Space Flight Center

Wallops Flight Facility, Wallops Island, Virginia

Inside Wallops

Volume XX-00

Number: 13

April 3, 2000

Mars Program Assessment Report Outlines Route To Success

An in-depth review of NASA's Mars exploration program found significant flaws in formulation and execution led to the failures of recent missions and provides recommendations for future exploration of Mars.



Mars photo by Hubble Space Telescope

NASA Administrator Daniel S. Goldin appointed Thomas Young, a seasoned space-industry executive, to independently assess current and future Mars programs.

"I congratulate Tom Young and his team for a superb report," Goldin said. "They have rigorously scrutinized both successful and unsuccessful missions, shining a searchlight into every corner of the incredibly complex endeavor of deep space exploration. He and his team have delivered an extraordinary report and I thank them on behalf of NASA and the American people."

"Speaking for the team, I would like to express my appreciation for the spirit of cooperation that we enjoyed at NASA Headquarters, the Jet Propulsion Laboratory and at Lockheed Martin," Young said. "The managers, scientists and engineers we spoke with were candid and frank in their presentations and in their answers to our questions. Everyone worked toward the same goal: finding ways to make the Mars program successful."

"One of the things we kept in mind during the course of our review is that in the conduct of space missions, you get only one strike, not three. Even if thousands of functions are carried out flawlessly, just one mistake can be catastrophic to a mission," Young said. "Our review confirmed that mistakes can be prevented by applying experienced oversight, sufficient testing and independent analysis."

The report concluded the most probable cause of the failure was the generation

of spurious signals when the lander legs were deployed during descent. The spurious signals gave a false indication that the spacecraft had landed, resulting in a premature shutdown of the engines and the destruction of the lander when it crashed on Mars.

Without any entry, descent and landing telemetry data, there is no way to know whether the lander reached the terminal descent propulsion phase. If it did reach this phase, it is almost certain that premature engine shutdown occurred, the report concluded.

NASA's Office of Space Science will develop an integrated strategic response to the findings and recommendations of the report. NASA Chief Engineer W. Brian Keegan also will coordinate an integrated Agency response to the recent reviews of NASA program management practices.

In addition, Dr. Edward Weiler, the Associate Administrator for Space Science, announced the cancellation of the planned Mars 2001 lander awaiting his approval of a new overall Mars "architecture" plan. Weiler also will make management changes in the Mars Exploration Program at NASA Headquarters and work with the California Institute of Technology to institute effective change at JPL, clearly articulating lines of authority, clarifying roles and improving communication between all organizations involved.

The the Mars Program report and related documents are available on the NASA homepage: <http://www.nasa.gov>

HESSI Sustains Damage During Vibration Testing

NASA's High Energy Solar Spectroscopic Imager (HESSI) spacecraft — an international mission to explore the basic physics of particle acceleration and energy release in solar flares, has sustained substantial damage during vibration testing. Repairs to the spacecraft will likely delay its launch to no earlier than January 2001.

The damage was caused when a test device that simulates vibrations the spacecraft can expect during launch delivered approximately 20G's, ten times the appropriate levels for the test. As a result, the spacecraft's structure was damaged and two of the four solar arrays were cracked. The status of the HESSI instrument is not currently known.

NASA Wallops Begins Final Phase of Contamination Cleanup

The final phase of the cleanup of soil and groundwater at a three acre site contaminated with petroleum by-products from an old aviation fuel tank facility began March 27, 2000, at the NASA Goddard Space Flight Center's Wallops Flight Facility.

The contamination, caused by aviation gasoline and jet fuel leaks and spills of underground storage tanks and piping prior to 1981, does not pose a threat to public or private drinking wells, including those supplying Wallops or Chincoteague Island.

The cleanup is part of a process since 1988 when NASA began an environmental assessment of its old aviation fuel tank farm adjacent to the runways on the Wallops Main Base. The Chincoteague Naval Air Station from 1942 to 1959 used the old aviation fuel farm. In 1959, NASA acquired the facility and used the fuel farm until 1981.

In the final phase of cleanup, vapor extraction is being performed to remediate the soil. This process is similar to using a vacuum cleaner. The suction from the vapor extraction piping, embedded in the ground, pulls the petroleum by-product vapors, thus, removing the contamination from the soil.

Groundwater remediation is being achieved by removing groundwater, treating it, and using a drain field to re-inject the water. With this process, approximately 100 gallons of water per minute is extracted, cleaned and re-injected. It is anticipated that this will be conducted 24 hours per day, seven days per week. Both the soil and groundwater remediation is expected to run a maximum of 10 years.

The final, or third phase, began in 1991. In phase one the underground fuel storage tanks were removed and shallow contaminated soils were excavated and disposed. Phase two concentrated on the final design for the remediation. Since 1988, NASA has spent more than \$2.5 million in the cleanup efforts.

On the Road.....

Roland Wescott, Flight Safety Group, participated in a Career Fair at Washington High School, Princess Anne, MD on March 31.

Keith Koehler, Public Affairs Office, participated in a Career Fair at Crisfield High School on March 31.

William B. Johnson Retires



After more than 34 years with NASA Wallops Flight Facility, William B. (Bill) Johnson retired on March 31, 2000. A Salisbury, MD native, Johnson graduated from Washington College in 1961. Following graduation, he enlisted in the U.S. Air Force and served as a Military Personnel Officer for over 4 years. Johnson was stationed in California, Turkey, and Crete.

In 1966, Johnson came to work for NASA Wallops as a Position Classification Specialist in the Personnel Office. He transferred to the Sounding Rocket and Balloon Projects Office in 1985. Until his retirement, Johnson managed scientific grants for sounding rocket, space shuttle and satellite experiments with various universities, industry and government agencies.

Administrator's Safety Message

Testing and System Health: EEE Parts and Packaging

Our desire to enhance safety while doing more with less emphasizes the importance of adequate testing for NASA missions. The rapid development of reliable NASA products requires sound, smart engineering and scientific planning and design with well-thought-out verification and test activities to ensure mission success. Our difficulties with recent failures in late stages of development, such as system integration and testing, and during mission operations, have greatly impacted our product performance, schedule and cost. We must use the sound fundamentals of good design, test and verification to provide high-quality products to our customers. A do it right the first time mentality will result in decreased failures and the reduction of risk in performance, schedule and ultimately, cost. Carefully planned test activities, based on knowledge, are critical to ensuring system health and reducing risk.

The complete text as well as Background and Proposed Next Steps for this topic can be found on the Administrator's Weekly Topics web site <http://www.nasa.gov/bios/health_messages.html>.

Alan R. Selser Retires



Alan R. (Al) Selser retired on March 31, 2000 after more than 37 years with NASA. A native of Philadelphia, PA, Selser began his career with NASA Wallops as an Electrical Engineering student in the "Co-op" program.

Following graduation from Drexel University in 1966, Selser accepted a full-time position at NASA Wallops in the Radar Systems Section. His work included the development of ground-based microwave and optical tracking systems, and related flight systems for aircraft, suborbital, and satellite projects. In recent years, Selser's work expanded into telenmentry systems engineering.

Selser was appointed Head of the RF Tracking and Digital Systems Section in 1995 where he managed all of the Wallops radar and telemetry engineering work. Following the Goddard Space Flight Center's reorganization in December 1997, he was appointed Associate Head of the Microwave Systems Branch and remained in that position until retirement.



Easter Egg Hunt April 15 10:00 a.m. Bldg. F-3

For children ages 10 and under.
Prizes, Hot Dogs, Sodas, Videos

The rain date is April 22. Volunteers are needed for this event. Contact Gerry McIntire, x1889 or Bev Hall, x1714.



NASA Visitor Center Events Scheduled for April

April 22 — Earth Day Celebration

The Visitor Center will hold an Earth Day Celebration from 10 a.m. to 3 p.m. with several Earth science related activities. At 3 p.m. there will be a biking tour of the Wallops Main Base. Participants must bring their own bicycles, wear a helmet and sign up at the Visitor Center by 2 p.m.

Saturdays and Sundays — Puppets in Space

Puppets in Space is a 10-minute puppet show presented at 11 a.m. on Saturdays and Sundays for children of all ages. Puppet astronauts and Sam the monkey will explore space flight and the space suit. An eight-minute version of the film "Astrosmiles" follows the puppet show.

Sundays — Humans in Space

Humans in space is a 30-minute program presented at 1 p.m. on Sundays. Children of all ages will learn what it's like to live and work in space including a review of what the astronauts eat and their wardrobes in space. The program is followed by a hands-on activity that gives children the opportunity to create their own "space helmet".

Daily — Space Ace

Children 5 to 10 years old can earn a "Space Ace" certificate and a lithograph any day they come to the Visitor Center by completing an activity sheet.

The Visitor Center is open from 10 a.m. to 4 p.m., Thursday through Monday. The complex is closed on Tuesday and Wednesday. For further information, call (757) 824-2297.

Pre-S.A.T. Testing For Grades 8-12 April 15 9:30 a.m. - 1 p.m. Bldg. E-2

Info call David Smith, x1316 or Roland Wescott, x1624

Inside Wallops is an official publication of Goddard Space Flight Center and is published by the Wallops Office of Public Affairs, Extension 1584, in the interest of Wallops employees.

Editor
Printing

Betty Flowers
Printing Management Office

<http://www.wff.nasa.gov>